IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	)
	) Confirmation No. 7100
DALPIAZ, Michael et al.	)
	) Group Art Unit: 2882
Application No.: 10/644,992	)
	) Examiner: A. C. HO
Filing Date: August 21, 2003	)
	) Customer No. 25269
For: SYSTEM FOR DETERMINING A SENSOR	)
HOLDER	)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPELLANT'S BRIEF UNDER 37 C.F.R. § 41.37

This brief is in furtherance of the Notice of Non-Compliant Appeal Brief dated August 13, 2007, and further to the Notice of Appeal filed in connection with this application on February 26, 2007, and appealing the final rejection of claims 1-4, 6-19 and 21-29 mailed November 27, 2006. The fees required under 37 C.F.R. § 41.20 (b)(2) have been previously submitted.

1.   The Real Party in Interest

The real party in interest in this appeal is SIRONA DENTAL SYSTEMS GmbH & Co. KG, of Fabrikstrasse 31, D-64625 Bensheim, Germany.

2.   Related Appeals and Interferences

Appellant is not aware of any other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal.

3.   **Status of Claims**

The status of the claims is as follows:

Claims canceled: 5 and 20

Claims pending: 1-4, 6-19 and 21-29

Claims withdrawn from consideration but not canceled: None

Claims allowed: None

Claims rejected: 1-4, 6-19 and 21-29

The claims on appeal are 1-4, 6-19 and 21-29.

4.   **Status of Amendments**

Since the issuance of the November 27, 2006 Final Office Action, which was issued in response to an Amendment filed September 11, 2006, no further Amendments have been filed.

5.   **Summary of Claimed Subject Matter**

As recited in independent claims 1 and 16, and illustrated in Figs. 1-3 (reproduced below) Appellant's invention relates generally to a system and method for positioning a dental X-ray apparatus.
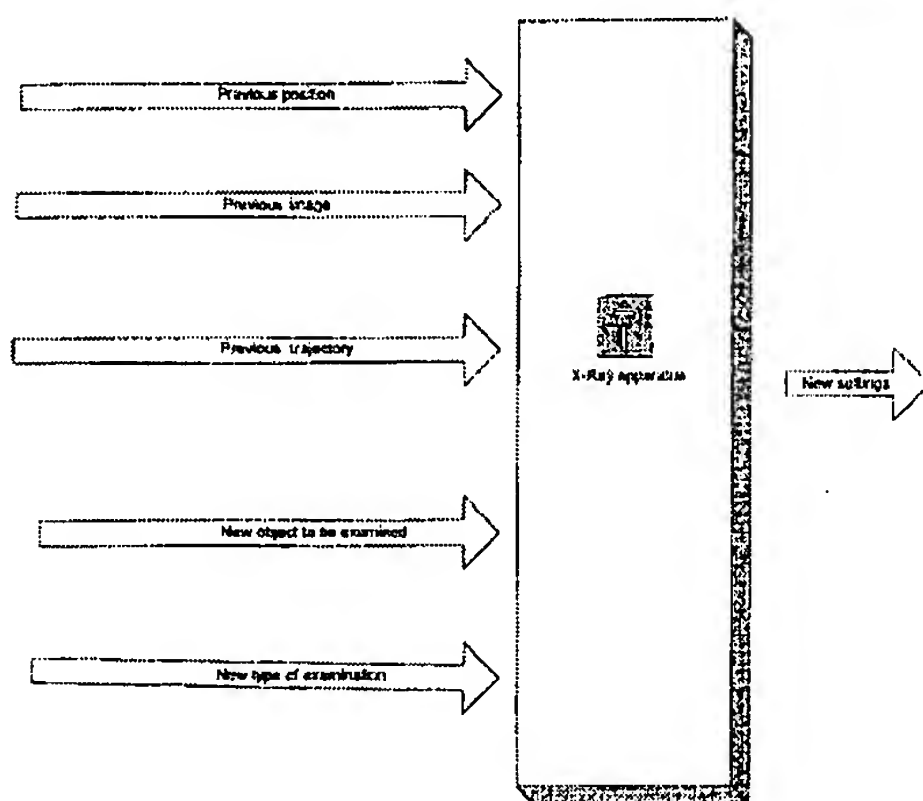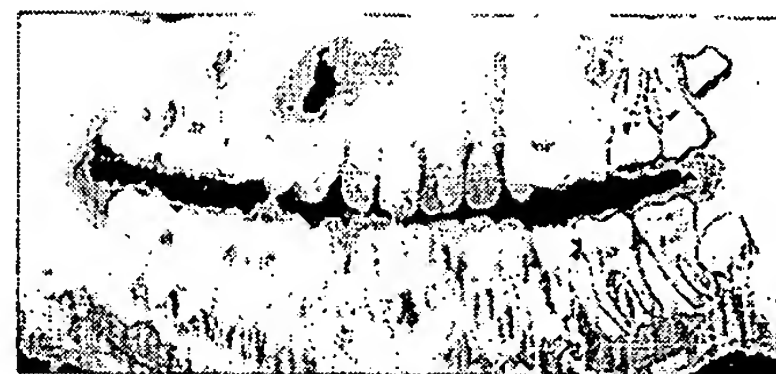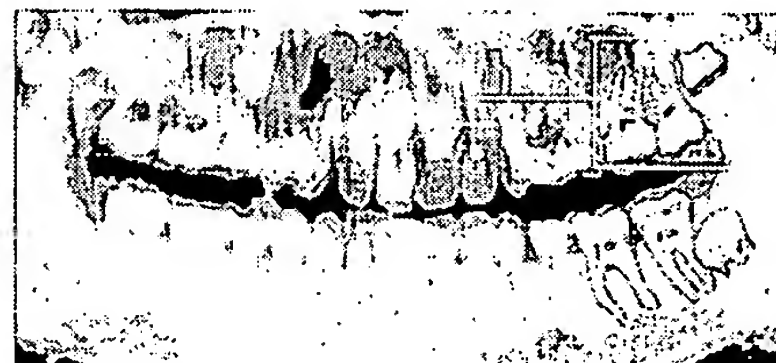
Figs. 1-3 of App. Serial No. 10/644,992

With regard to independent claim 1, as shown in Figs. 1-3 (reproduced on the previous page), claim 1 recites a system for positioning a dental X-ray apparatus, (page 2, line 14). The system includes an input and output device (i.e. a keyboard and a display monitor) for interactive control, (page 2, lines 14-18). The system further includes a storage area, in which at least one digitized dental X-ray image and information concerning the dental X-ray apparatus assignable to the digitized dental X-ray image are stored, (page 2, lines 18-20). This information concerning the X-ray apparatus preferably relates to position parameters of the movable parts, (page 2, lines 20-23). Thus a certain area of an X-ray image can be associated with the corresponding parameters of the X-ray apparatus, (page 2, lines 23-24). Vice versa, the X-ray apparatus can be controlled by the X-ray image, (page 2, lines 24-25).

As further recited in independent claim 1, the system further includes a computer interface, via which information can be interchanged with the dental X-ray apparatus, and means (i.e. a pointing device) for selecting areas in the digitized dental X-ray image, (page 2, lines 27-29). The system also includes a processing unit which effects calculations based on the digitized dental X-ray image, the relevant information concerning the dental X-ray apparatus, and the selected area, in order to ascertain control data for controlling the dental X-ray apparatus such that the selected area is covered when a new dental X-ray image is made, (page 3, lines 1-4). The information concerning the X-ray apparatus includes coordinates of a trajectory which have been saved in relation to the digitized X-ray image, (page 4, lines 19-20). The processing unit further effects calculations of the trajectory which gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time (page 3, lines 5-8 and page 4, lines 20-21).

With regard to independent claim 16, as shown in Figs. 1-3 (reproduced on the previous page), claim 16 recites a method of positioning an emitter or a detector of a dental X-ray apparatus using an existing digitized dental X-ray image and information concerning the dental X-ray apparatus and assignable to the digitized dental X-ray image, (page 4, line 6). The method includes the steps of carrying out computation on the basis of the digitized X-ray image, relevant information concerning the dental X-ray apparatus, and a selected area, in order to ascertain control data which controls the dental X-ray apparatus such that the selected area can be depicted in a new dental X-ray image, (page 4, lines 8-16). As discussed above, the information concerning the X-ray apparatus includes coordinates of the trajectory which have been saved in

relation to the digitized X-ray image, and a segment of the trajectory is calculated on the basis of the selected area, (page 4, lines 19-21). The trajectory gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time, (page 3, lines 5-8).

6. **Grounds of Rejection to be Reviewed on Appeal**

The claims on appeal are 1-4, 6-19 and 21-29.

Of claims 1-4, 6-19 and 21-29, claims 1-4, 6-9, 11, 12, 14-19, 21, 22, 24, 25 and 27-29 stand rejected under 35 U.S.C.§ 102 (e), as being anticipated by U.S. Patent No. 6,463,121 to *Milnes*, and claims 10, 13, 23 and 26 stand rejected under 35 U.S.C.§ 103 (a), as being unpatentable over *Milnes* in view of U.S. Patent No. 6,233,310 to *Relihan*.

The issue presented is whether claims 1-4, 6-9, 11, 12, 14-19, 21, 22, 24, 25 and 27-29 are anticipated by *Milnes*.

7. **Argument**

The rejection of independent claim 1, and claims 2-4, 6-15 and 28, which depend therefrom, and independent claim 16, and claims 17-19, 21-27 and 29, which depend therefrom, is improper and should be reversed.

In the Office Action, claims 1-4, 6-9, 11, 12, 14-19, 21, 22, 24, 25 and 27-29 stand rejected under 35 U.S.C.§ 102 (e), as being anticipated by U.S. Patent No. 6,463,121 to *Milnes*.

Appellant respectfully traverses the rejection of claims 1-4, 6-19 and 21-29 for the following reasons.

With regard to independent claim 1, Appellant respectfully asserts that *Milnes* fails to teach or fairly suggest a system for positioning a dental X-ray apparatus including, at least, "a processing unit which effects calculations based on the digitized dental X-ray image, the relevant information concerning the dental X-ray apparatus, and the selected area, in order to ascertain control data for controlling the dental X-ray apparatus such that the selected area is covered when a new dental X-ray image is made, the information concerning the X-ray apparatus comprises coordinates of a trajectory which have been saved in relation to the digitized X-ray image, the processing unit further effects calculations of the trajectory which gives knowledge of

movement of the dental X-ray apparatus carried out at a certain point of time," as recited in independent claim 1.

Support for these features recited in claim 1 can be found at least on page 2, line 14 to page 5, line 9, and further on page 5, line 25 to page 7, line 9 of the originally filed specification, and in Figs. 1-3 of the originally filed drawings.


Fig. 1

Fig. 2

Fig. 3
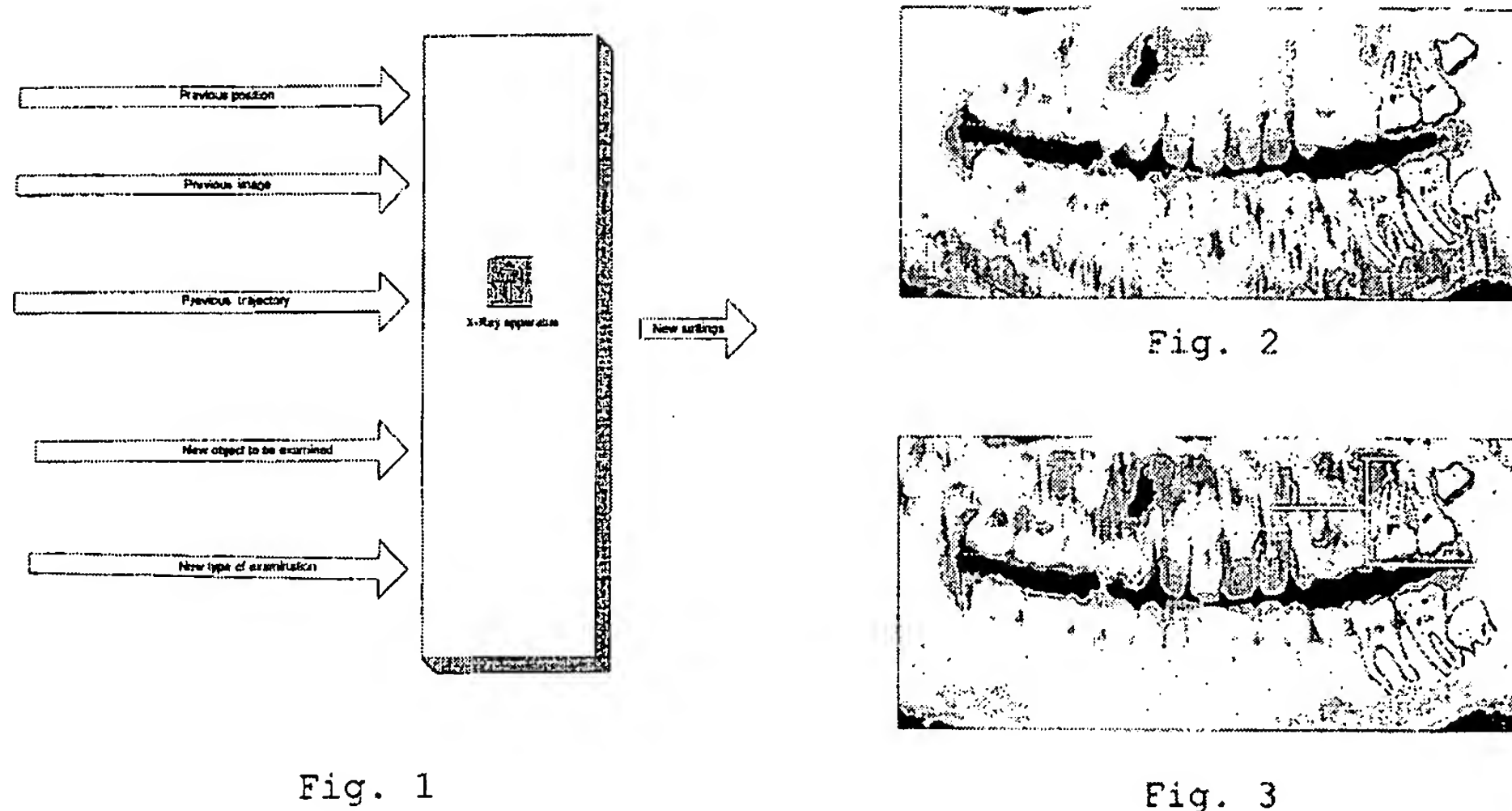
Figs. 1-3 of App. Serial No. 10/644,992

Specifically, as shown in Figs. 1-3 (reproduced above), the present invention provides a system for positioning a dental X-ray apparatus, (page 2, line 14). The system includes an input and output device (i.e. a keyboard and a display monitor) for interactive control, (page 2, lines 14-18). The system further includes a storage area, in which at least one digitized dental X-ray image and information concerning the dental X-ray apparatus assignable to the digitized dental X-ray image are stored, (page 2, lines 18-20). This information concerning the X-ray apparatus preferably relates to position parameters of the movable parts, (page 2, lines 20-23). Thus a certain area of an X-ray image can be associated with the corresponding parameters of the X-ray apparatus, (page 2, lines 23-24). Vice versa, the X-ray apparatus can be controlled by the X-ray image, (page 2, lines 24-25).

The system further includes a computer interface, via which information can be interchanged with the dental X-ray apparatus, and means (i.e. a pointing device) for selecting

areas in the digitized dental X-ray image, (page 2, lines 27-29). The system also includes a processing unit which effects calculations based on the digitized dental X-ray image, the relevant information concerning the dental X-ray apparatus, and the selected area, in order to ascertain control data for controlling the dental X-ray apparatus such that the selected area is covered when a new dental X-ray image is made, (page 3, lines 1-4). The information concerning the X-ray apparatus includes coordinates of a trajectory which have been saved in relation to the digitized X-ray image, (page 4, lines 19-20). The processing unit further effects calculations of the trajectory which gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time (page 3, lines 5-8 and page 4, lines 20-21).

With regard to claims 1-4, 6-19 and 21-29, the Final Office Action cites *Milnes* as teaching or suggesting the system and method recited in claims 1-4, 6-9, 11, 12, 14-19, 21, 22, 24, 25 and 27, and further cites *Relihan* as teaching or suggesting the system and method recited in claims 10, 13, 23 and 26.
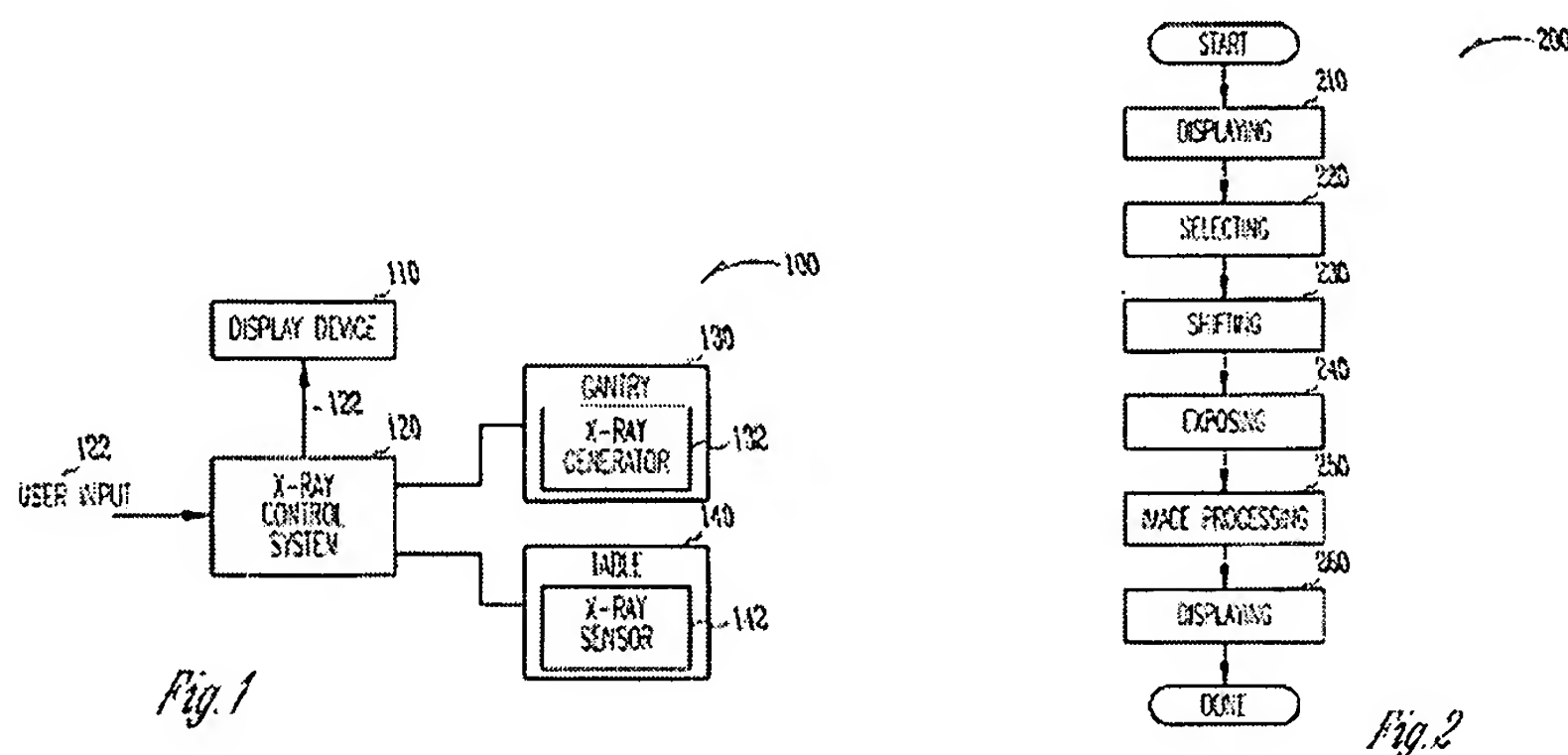
Figs. 1 and 2 of *Milnes*

Milnes, as illustrated in Figs. 1-8 (especially Figs. 1 and 2; reproduced above) thereof, discloses an X-ray system 100 and method including a display device 110, a gantry 130 having an X-ray generator 132, a table 140 having an X-ray sensor 142, and an X-ray control system 120 connected to the display device, the gantry and the table, (see Col. 3:32-37 of *Milnes*). The X-ray control system includes user input 122 for indicating the position of the next X-ray exposure, (Col. 3:47-48). The X-ray control system receives X-ray data from the sensor,

processes the data to form a static X-ray image, displays the X-ray image on the display device and shifts the X-ray generator relative to the X-ray sensor, (Col. 3:65 – Col. 4:9). The amount and direction of shift is accurately determined using data from the previous static X-ray image, (Col. 2:1-3 and Col. 7:1-4). Further, as discussed in Col. 5:43-56 of *Milnes*, the *Milnes* X-ray control system 120 automatically follows a tip of a catheter or a contrast injected into a body in order to reduce the number, size and duration of the static X-ray images. The catheter tip and the contrast injected into a body may move on a trajectory.

Therefore, whereas *Milnes* appears to disclose manual (i.e. operator controlled; see Col. 3:47 – Col. 4:16) or automatic (catheter tip/contrast based; see Col. 6:43-67) movement of the X-ray apparatus, *Milnes* clearly does not teach or fairly suggest a dental X-ray apparatus including, "a processing unit which effects calculations based on the digitized dental X-ray image, the relevant information concerning the dental X-ray apparatus, and the selected area, in order to ascertain control data for controlling the dental X-ray apparatus such that the selected area is covered when a new dental X-ray image is made, the information concerning the X-ray apparatus comprises coordinates of a trajectory which have been saved in relation to the digitized X-ray image, the processing unit further effects calculations of the trajectory which gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time," as recited in independent claim 1.

Specifically, contrary to the teachings of *Milnes*, Claim 1 recites that the information concerning the X-ray apparatus includes coordinates of a trajectory which have been saved in relation to the digitized X-ray image. This means that the X-ray apparatus must have been moving relative to the object to be X-rayed during acquisition. This further means that information is saved of how the X-ray apparatus has moved during the acquisition of the image already stored in the storage area in order to ascertain control data for steering the X-Ray apparatus to make it cover the selected area (for the next image), as discussed on page 3, lines 1-4 of the description.

On the contrary, as discussed in Col. 6:43-57 of *Milnes*, the *Milnes* X-ray control system 120 automatically follows a tip of a catheter or a contrast injected into a body in order to reduce the number, size and duration of the X-ray images. The catheter tip and the contrast injected into a body may move on a trajectory.

In other words, *Milnes* does not disclose that the information about the trajectory is stored or calculated, because *Milnes* does not disclose movement of the X-ray apparatus relative to the object to be X-rayed in the image already stored in the storage area at all. The X-ray control system just follows a tip or a contrast in the recent exposure.

Milnes itself clearly indicates that X-ray control system 120 <u>automatically</u> follows a tip of a catheter or a contrast injected into a body in order to reduce the number, size and duration of the X-ray images, with the catheter tip and the contrast injected into a body moving on a trajectory.

Thus based on the express language of *Milnes*, Appellant respectfully asserts that the holding of the Final Office Action as indicated above is unsupported and in fact contrary to the clear language of *Milnes*.

Appellant thus respectfully asserts that *Milnes* clearly does not teach or fairly suggest a dental X-ray apparatus, wherein, "the information concerning the X-ray apparatus comprises coordinates of a trajectory which have been saved in relation to the digitized X-ray image," as recited in independent claim 1.

In the interest of expediting prosecution of this application, claim 1 was further amended per the Amendment under 37 C.F.R. §1.111 filed on September 11, 2006 to recite, "the processing unit further effects calculations of the trajectory which gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time."

With regard to the teachings of *Milnes*, Appellant respectfully asserts that *Milnes* also does not teach or fairly suggest the noted features of independent claim 1, namely the processing unit further effects calculations of the trajectory which gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time.

Specifically, as discussed in the specification on page 1, lines 1-8, a "component of the present invention is a processing unit, which carries out calculations on the basis of the digitized, preferably individual X-ray image, the associated information concerning the X-ray apparatus and the selected area in order to ascertain control data for steering the X-ray apparatus to make it cover the selected area. These calculations are preferably based on the path information, which, as described above, has been assigned to the imaging information. The path information gives

knowledge of the movement of the X-ray apparatus carried out at a certain point of time. Thus the coordinates of the X-ray apparatus are given in relation to a certain point of time."

As discussed on page 4, lines 13-17, "calculations are carried out based on the digitized X-ray image, the relevant information concerning the X-ray apparatus, and the selected area, in order to ascertain control data which will steer the X-ray apparatus such that the selected area is imaged." Further, as discussed on page 4, lines 19-24, "[t]he information concerning the X-ray apparatus preferably relates to coordinates of the trajectories stored in relation to the digitized X-ray image. With the aid of this information it is possible to calculate a segment of the trajectory for the selected area. The calculation can likewise take into account current and voltage parameters which have been stored in relation to the digitized X-ray image."

Yet further, as discussed on page 5, lines 27-30, "calculation of the presettings involves the previous position, the previous image, and the previous trajectory. Also required for the calculation is the new object to be examined and the new type of examination. The new settings are calculated in the manner described above. The X-ray apparatus is set on the basis of the parameters thus determined."

Thus based on the disclosure above, as recited in independent claim 1, the trajectory which gives knowledge of movement of the dental X-ray apparatus is calculated by means the processing unit.

Thus based at least on the distinctions specified above and the further amendments to claim 1 per the Amendment under 37 C.F.R. §1.111 filed on September 11, 2006, Appellant respectfully asserts that *Milnes* fails to teach or fairly suggest a system for positioning a dental X-ray apparatus, wherein, "the processing unit further effects calculations of the trajectory which gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time," as recited in independent claim 1.

With regard to the teachings of *Relihan*, which has been cited as teaching or suggesting the features or steps recited in dependent claims 10, 13, 23 and 26, Appellant respectfully asserts that in view of the requested allowance of independent claim 1 over the teachings of *Milnes*, the teachings of *Relihan* as applied to dependent claims 10, 13, 23 and 26 would be inapplicable upon allowance of independent claim 1.

As pointed out in MPEP § 2131, "[t]o anticipate a claim, the reference must teach every element of the claim." "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. Of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Moreover, as pointed out in M.P.E.P. § 2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art". *In re Royka*, 409 F.2d 981, 180 USPQ 580 (CCPA 1974). Since these criteria have not been met, Appellant respectfully asserts that the rejections under 35 U.S.C. § 102 (e) and § 103 (a) should be withdrawn because *Milnes* does not teach or suggest each feature of independent claim 1.

In view of the above arguments, Appellant respectfully requests the rejection of independent claim 1 under 35 U.S.C. § 102 be withdrawn. Additionally, claims 2-4, 6-15 and 28, which depend from independent claim 1, are allowable at least because their base claim is allowable, as well as for the additional features recited therein.

Independent claim 16

With regard to independent claim 16, Appellant respectfully asserts that *Milnes* fails to teach or fairly suggest a method of positioning one of an emitter and a detector of a dental X-ray apparatus using an existing digitized dental X-ray image and information concerning the dental X-ray apparatus and assignable to the digitized dental X-ray image, the method including the steps of, at least, "carrying out computation on the basis of the digitized X-ray image, relevant information concerning the dental X-ray apparatus, and a selected area, in order to ascertain control data which controls the dental X-ray apparatus such that the selected area can be depicted in a new dental X-ray image, the information concerning the X-ray apparatus comprises coordinates of the trajectory which have been saved in relation to the digitized X-ray image, and a segment of the trajectory is calculated on the basis of the selected area, and the trajectory gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time," as recited in independent claim 16 (emphasis added).

Appellant respectfully asserts that independent claim 16 is allowable for at least the reasons presented above for the allowance of independent claim 1, and the additional features recited therein. In the interest of avoiding redundant arguments, the reasons for allowance of

independent claim 16 are not repeated herein. Additionally, claims 17-19, 21-27 and 29, which depend from independent claim 16, are allowable at least because their base claim is allowable, as well as for the additional features recited therein.

8. Conclusion

In view of the foregoing, Appellant respectfully requests the reversal of the Examiner's rejections and allowance of the pending claims.
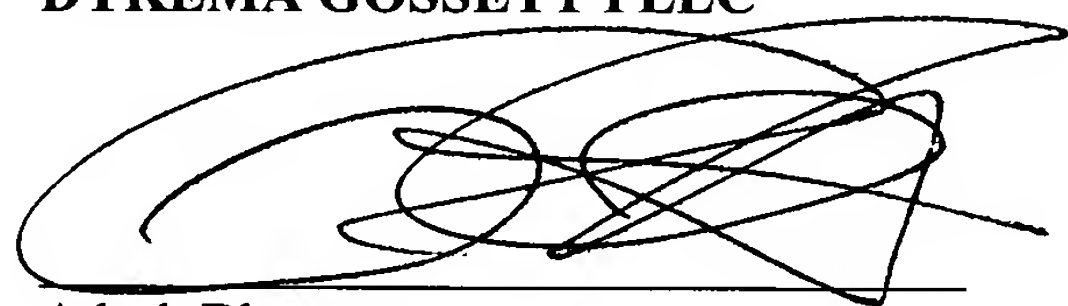
If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 04-2223. If a fee is required for an extension of time under 37 C.F.R. §1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

DYKEMA GOSSETT PLLC

Dated: September 13, 2007   By:

Adesh Bhargava
Reg. No. 46,553

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CLAIMS APPENDIX

1. (Previously Presented) A system for positioning a dental X-ray apparatus, comprising:

    - an input and output device for interactive control,

    - a storage area, in which at least one panoramic digitized dental X-ray image and information concerning the dental X-ray apparatus assignable to the digitized dental X-ray image are stored,

    - a computer interface, via which information can be interchanged with the dental X-ray apparatus,

    - means for selecting areas in the digitized dental X-ray image, and

    - a processing unit which effects calculations based on the digitized dental X-ray image, the relevant information concerning the dental X-ray apparatus, and the selected area, in order to ascertain control data for controlling the dental X-ray apparatus such that the selected area is covered when a new dental X-ray image is made, the information concerning the X-ray apparatus comprises coordinates of a trajectory which have been saved in relation to the digitized X-ray image, the processing unit further effects calculations of the trajectory which gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time.

2. (Previously Presented) A system as defined in claim 1, wherein the digitized X-ray image comprises an individual image of a patient.

3. (Previously Presented) A system as defined in claim 1, wherein the X-ray apparatus is of a type suitable for various types of image, and wherein means for selecting the type of image are provided.

4. (Previously Presented) A system as defined in claim 1, further comprising means for positioning a patient relatively to the X-ray apparatus, wherein the control data is adapted to control said means for positioning the patient.

5. (Canceled)

6. (Previously Presented) A system as defined in claim 1, wherein the storage area includes current and/or voltage parameters saved in relation to the digitized X-ray image.

7. (Previously Presented) A system as defined in claim 1, wherein the storage area includes information concerning gray tones in the representation of the image saved in relation to the digital X-ray image.

8. (Previously Presented) A system as defined in claim 1, wherein the processing unit includes computation for determining said control data which takes into account the type of image.

9. (Previously Presented) A system as defined in claim 1, wherein the processing unit includes computation for determining said control data which takes into account the purpose of diagnosis.

10. (Previously Presented) A system as defined in claim 1, wherein the processing unit includes patient-dependent data, including one of size, weight, type, race, age, jaw shape, and previous treatments which are taken into account when determining said control data.

11. (Previously Presented) A system as defined in claim 1, further comprising means for automatically recognizing areas by pattern recognition algorithms.

12. (Previously Presented) A system as defined in claim 1, wherein the selecting means are designed such that areas can be selected manually.

13. (Previously Presented) A system as defined in claim 10, wherein the processing unit includes one of statistical and stochastic linkings of the patient-dependent data.

14. (Previously Presented) A system as defined in claim 1, further comprising means provided for making a series of radiograms at different positions starting from a selected position.

15. (Previously Presented) A dental X-ray apparatus including a system as defined in claim 1.

16. (Previously Presented) A method of positioning one of an emitter and a detector of a dental X-ray apparatus using an existing digitized dental X-ray image and information concerning the dental X-ray apparatus and assignable to the digitized dental X-ray image, comprising the steps of:

- loading and displaying at least one panoramic digitized dental X-ray image,

- determining coordinates of areas, with reference to the digitized dental X-ray image, which are to be depicted in another X-ray image,

- loading information concerning the dental X-ray apparatus, and

- carrying out computation on the basis of the digitized X-ray image, relevant information concerning the dental X-ray apparatus, and a selected area, in order to ascertain control data which controls the dental X-ray apparatus such that the selected area can be depicted in a new dental X-ray image, the information concerning the X-ray apparatus comprises coordinates of the trajectory which have been saved in relation to the digitized X-ray image, and a segment of the trajectory is calculated on the basis of the selected area, and the trajectory gives knowledge of movement of the dental X-ray apparatus carried out at a certain point of time.

17. (Previously Presented) A method as defined in claim 16, wherein the digitized X-ray image comprises an individual image of the patient.

18. (Previously Presented) A method as defined in claim 16, wherein the type of image to be made by the X-ray apparatus is selected prior to the step of loading information concerning the dental X-ray apparatus.

19. (Previously Presented) A method as defined in claim 16, wherein the control data is adapted to control means for positioning the patient relative to the X-ray apparatus.

20. (Canceled)

21. (Previously Presented) A method as defined in claim 16, wherein the computation step includes one of current and voltage parameters which are saved in relation to the digitized X-ray image.

22. (Previously Presented) A method as defined in claim 16, wherein the computation for determination of the control data takes into account one of the type of examination and the purpose of diagnosis of the patient.

23. (Previously Presented) A method as defined in claim 16, wherein the patient-dependent data, including one of size, weight, type, race, age, jaw shape, and previous treatments, are taken into account when computing the control data.

24. (Previously Presented) A method as defined in claim 16, wherein the computation step includes automatically recognizing areas by pattern recognition algorithms.

25. (Previously Presented) A method as defined in claim 16, wherein the areas can be determined manually.

26. (Previously Presented) A method as defined in claim 23, wherein one of statistical and stochastic linkings of the patient-dependent data are carried out.

27. (Previously Presented) A method as defined in claim 16, further comprising the step of making a series of radiograms at different positions starting from the selected position.

28. (Previously Presented) A system as defined in claim 11, wherein the areas are teeth.

29. (Previously Presented) A method as defined in claim 24, wherein the areas are teeth.

Evidence Appendix (37 CFR 41.37(c)(1)(ix)

None

Related Appeals and Interferences Appendix (37 CFR 41.37(c)(1)(x)

None